# TED02 – (Enviro Part 04) Ozone Depletion

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. E.4.1 Describe the formation and depletion of ozone in the stratosphere by natural processes. (2) Formation: O2 + uv 🡪 2O• / O2 + O• 🡪 O3 Depletion: O3 + uv 🡪 O2 + O• / O3 + O• 🡪 2O2.
   1. What is the difference between “good” ozone and “bad” ozone?
   2. What is stratospheric ozone, where is it found, and how dense is it?
   3. There are three types of UV radiation, ozone works to absorb the harmful rays, diagram what gets through:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Spectral Range (nm)** | **Harmful to Humans?** | **Blocked by Ozone?** | **UV-c** | **UV-b** | **UV-a** |
| **UV – a** |  |  |  |  | | |
| **UV – b** |  |  |  |  | | |
| **UV – c** |  |  |  |  | | |

* 1. Describe the process of ozone formation and depletion

|  |  |  |
| --- | --- | --- |
|  | **Wavelength of Radiation** | **Equations:** |
| **Ozone Formation** |  |  |
| **Ozone Depletion** |  |  |

* 1. Why is it important that a balance remain between ozone formation and ozone depletion?
  2. What would happen if both processes equally quit working?

1. E.4.2 List the ozone-depleting pollutants and their sources. (1) Examples include chlorofluorocarbons (CFCs) and oxides of nitrogen (NOx).
   1. What is the ozone “hole?” Where is it found?
   2. Man-made ozone depletion mainly results from two source molecules, complete the following table:

|  |  |  |
| --- | --- | --- |
|  | **What happens?** | **Equations:** |
| **CFC’s** |  |  |
| **N2O** |  |  |

1. E.4.3 Discuss the alternatives to CFCs in terms of their properties. (3) Alternatives include hydrocarbons, fluorocarbons and hydrofluorocarbons (HFCs). Include toxicity, flammability, the relative weakness of the C–Cl bond and the ability to absorb infrared radiation.
   1. There are three common alternatives to CFC’s, describe each below:

|  |  |
| --- | --- |
| **Alternative** | **Name, how it works, why it’s better, etc** |
| **HCFC’s** |  |
| **HFC’s** |  |
| **CxHy’s** |  |